

## Claims

1. A welding wire tangling-prevention device for preventing tangling of a welding wire (110) received in a large-capacity pail pack (100) in the form of a vertically-extending tube-shaped wound body (111) including eccentrically-stacked continuous spiral loops, when the welding wire is drawn out from the pail pack (100), comprising:
  - 10 a ring member (11) laid on a top surface of the tube-shaped wound body (111), the ring member (11) including an outer ring (11a) having an outer diameter smaller than an inner diameter of the pail pack (100), and an inner ring (11b) having an outer diameter smaller than an inner diameter of the outer ring (11a);
    - 15 a plurality of first comb teeth (12a) extending from an inner circumferential surface of the outer ring (11a) toward the inner ring (11b); and
    - 20 a plurality of second comb teeth (12b) extending from an outer circumferential surface of the inner ring (11b) toward the outer ring (11a), whereby the welding wire (110) is drawn out between the outer and inner rings (11a, 11b).
  - 25 2. The welding wire tangling-prevention device according to claim 1, wherein the first comb teeth (12a) of the outer ring (11a) have a length smaller than that of the second comb teeth (12b) of the inner ring (11b).

3. The welding wire tangling-prevention device according to claim 1 or 2, wherein the first and second comb teeth (12a, 12b) are alternately arranged.

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4. The welding wire tangling-prevention device according to claim 1, wherein each of the first and second comb teeth (12a, 12b) has a flat strip structure.

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5. The welding wire tangling-prevention device according to claim 1 or 4, wherein each of the first and second comb teeth (12a, 12b) forms a desired acute angle in a drawing direction of the welding wire (110) with respect to an associated one of the outer and inner rings (11a, 11b).

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6. The welding wire tangling-prevention device according to claim 5, wherein each of the first and second comb teeth (12a, 12b) forms a desired acute angle with respect to the top surface of the tube-shaped wound body (111).

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7. The welding wire tangling-prevention device according to claim 1 or 4, wherein the first comb teeth (12a) are upwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b) are downwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).

8. The welding wire tangling-prevention device according

to claim 1 or 4, wherein the first comb teeth (12a) are downwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b) are upwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).  
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9. The welding wire tangling-prevention device according to claim 1, wherein each of the first and second comb teeth (12a', 12b') has a thin brush structure.

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10. The welding wire tangling-prevention device according to claim 9, wherein each of the first and second comb teeth (12a', 12b') forms a desired acute angle in a drawing direction of the welding wire (110) with respect to an  
15 associated one of the outer and inner rings (11a, 11b).

11. The welding wire tangling-prevention device according to claim 9 or 10, wherein the first and second comb teeth (12a', 12b') are alternately arranged.

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12. The welding wire tangling-prevention device according to claim 11, wherein the first comb teeth (12a') of the outer ring (11a) have a length smaller than that of the second comb teeth (12b') of the inner ring (11b).

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13. The welding wire tangling-prevention device according to claim 9 or 10, wherein the first comb teeth (12a') are upwardly inclined while extending from the outer

ring (11a) toward the inner ring (11b), and the second comb teeth (12b') are downwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).

5        14. The welding wire tangling-prevention device according to claim 9 or 10, wherein the first comb teeth (12a') are downwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b') are upwardly inclined while extending from the  
10 inner ring (11b) toward the outer ring (11a).

15        15. A welding wire tangling-prevention device for preventing tangling of a welding wire (110) received in a large-capacity pail pack (100) in the form of a vertically-extending tube-shaped wound body (111) including eccentrically-stacked continuous spiral loops, when the welding wire is drawn out from the pail pack (100), comprising:

20        a ring member (11) laid on a top surface of the tube-shaped wound body (111), the ring member (11) including an outer ring (11a) having an outer diameter smaller than an inner diameter of the pail pack (100), and an inner ring (11b) having an outer diameter smaller than an inner diameter of the outer ring (11a);

25        a plurality of first comb teeth (12a) extending from an inner circumferential surface of the outer ring (11a) toward the inner ring (11b);

            a plurality of second comb teeth (12b) extending from an

outer circumferential surface of the inner ring (11b) toward the outer ring (11a); and

first and second guides (11c, 11d) for minimizing a drawing resistance of the welding wire (110) drawn out between 5 the outer and inner rings (11a, 11b), the first and second guides (11c, 11d) extending radially from respective lower surfaces of the outer and inner rings (11a, 11b) to form annular steps extending by a desired length between the outer and inner rings (11a, 11b), respectively.

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16. The welding wire tangling-prevention device according to claim 15, wherein the first comb teeth (12a) of the outer ring (11a) have a length smaller than that of the second comb teeth (12b) of the inner ring (11b).

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17. The welding wire tangling-prevention device according to claim 15 or 16, wherein the first and second comb teeth (12a, 12b) are alternately arranged.

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18. The welding wire tangling-prevention device according to claim 15, wherein each of the first and second comb teeth (12a, 12b) has a flat strip structure.

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19. The welding wire tangling-prevention device according to claim 15 or 18, wherein each of the first and second comb teeth (12a, 12b) forms a desired acute angle in a drawing direction of the welding wire (110) with respect to an associated one of the outer and inner rings (11a, 11b).

20. The welding wire tangling-prevention device according to claim 19, wherein each of the first and second comb teeth (12a, 12b) forms a desired acute angle with respect to the top surface of the tube-shaped wound body (111).

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21. The welding wire tangling-prevention device according to claim 15 or 18, wherein the first comb teeth (12a) are upwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b) are downwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).

22. The welding wire tangling-prevention device according to claim 15 or 18, wherein the first comb teeth (12a) are downwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b) are upwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).

20 23. The welding wire tangling-prevention device according to claim 16, wherein each of the first and second comb teeth (12a', 12b') has a thin brush structure.

25 24. The welding wire tangling-prevention device according to claim 23, wherein each of the first and second comb teeth (12a', 12b') forms a desired acute angle in a drawing direction of the welding wire (110) with respect to an associated one of the outer and inner rings (11a, 11b).

25. The welding wire tangling-prevention device according to claim 23 or 24, wherein the first and second comb teeth (12a', 12b') are alternately arranged.

5 26. The welding wire tangling-prevention device according to claim 25, wherein the first comb teeth (12a') of the outer ring (11a) have a length smaller than that of the second comb teeth (12b') of the inner ring (11b).

10 27. The welding wire tangling-prevention device according to claim 23 or 24, wherein the first comb teeth (12a') are upwardly inclined while extending from the outer ring (11a) toward the inner ring (11b), and the second comb teeth (12b') are downwardly inclined while extending from the 15 inner ring (11b) toward the outer ring (11a).

28. The welding wire tangling-prevention device according to claim 23 or 24, wherein the first comb teeth (12a') are downwardly inclined while extending from the outer 20 ring (11a) toward the inner ring (11b), and the second comb teeth (12b') are upwardly inclined while extending from the inner ring (11b) toward the outer ring (11a).

29. The welding wire tangling-prevention device 25 according to claim 15, wherein the first guide (11c) has an inner diameter smaller than an inner diameter of the outer ring (11a), and the second guide (11d) has an outer diameter larger than an outer diameter of the inner ring (11b), whereby

the first and second guides (11c, 11d) prevent the loops of the welding wire (110) from being outwardly protruded near the circumferential surfaces of the outer and inner rings (11a, 11b) as the welding wire (110) comes into contact with those 5 outer and inner rings (11a, 11b) in an excessively pressed state.

30. A welding wire tangling-prevention device for preventing tangling of a welding wire (110) received in a 10 large-capacity pail pack (100) in the form of a vertically-extending tube-shaped wound body (111) including eccentrically-stacked continuous spiral loops, when the welding wire (110) is drawn out from the pail pack (100), comprising:

15 a ring member (11") laid on a top surface of the tube-shaped wound body (111), the ring member (11") including an outer ring (11a") having an outer diameter smaller than an inner diameter of the pail pack (100), an inner ring (11b") having an outer diameter smaller than an inner diameter of the 20 outer ring (11a"), and first and second covers (13a", 13b") respectively surrounding the outer and inner rings (11a", 11b");

a plurality of first comb teeth (12a') having a thin brush structure, the first comb teeth (12a') surrounding the 25 outer ring (11a") while being surrounded by the first cover (13a") so that they are tightly interposed between the outer ring (11a") and the first cover (13a"), each of the first comb teeth (12a') extending from an inner circumferential portion

of the outer ring (11a") toward the inner ring (11b") through an annular opening formed at an inner circumferential portion of the first cover (13a");

a plurality of second comb teeth (12b') having a thin brush structure, the second comb teeth (12b') surrounding the inner ring (11b") while being surrounded by the second cover (13b") so that they are tightly interposed between the inner ring (11b") and the second cover (13b"), each of the second comb teeth (12b') extending from an outer circumferential portion of the inner ring (11b") toward the outer ring (11a") through an annular opening formed at an outer circumferential portion of the second cover (13b"); and

guides (11c", 11d") for minimizing a drawing resistance of the welding wire (110) drawn between the first and second comb teeth (12a', 12b'), the guides (11c", 11d") comprising lips respectively protruded by a desired length from the first and second covers (13a", 13b") of the outer and inner rings (11a", 11b") around the annular openings provided at the first and second covers (13a", 13b") along the first and second comb teeth (12a', 12b').

31. The welding wire tangling-prevention device according to claim 30, wherein the lip of each of the guides (11c", 11d") has a pair of lip portions gradually spaced apart from each other while extending by a desired length from an associated one of the first and second covers (13a", 13b") along an associated one of the first and second comb teeth (12a', 12b').

32. The welding wire tangling-prevention device according to claim 30, wherein each of the first and second comb teeth (12a', 12b') forms a desired acute angle in a drawing direction of the welding wire (110) with respect to an 5 associated one of the outer and inner rings (11a'', 11b'').

33. The welding wire tangling-prevention device according to claim 30 or 32, wherein the first and second comb teeth (12a', 12b') are alternately arranged.